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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,386	11/18/2003	Nilanjan Mukherjee	05-03-002	4414
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			2128	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/716,386

Applicant(s)

MUKHERJEE, NILANJAN

Examiner

Herng-der Day

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/24/04, 1/18/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-15 have been examined and rejected.

Drawings

2. The drawings are objected to for the following reasons. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include **all** of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the Examiner, the Applicants will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2-1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

(a) local area network (LAN) / Wide Area Network / Wireless (e.g. WiFi) adapter 1312, as described at paragraph [0076].

(b) Expansion bus interface 1314, as described at paragraph [0076].

(c) input/output (I/O) bus 1316, as described at paragraph [0076].

(d) keyboard/mouse adapter 1318, as described at paragraph [0076].

(e) step 1455, as described at paragraph [0086].

2-2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because:

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(a) In Figure 13, reference character “1322” has been used to designate both LAN/WAN/WiFi Adapter and I/O Adapter.

(b) In Figure 13, reference character “1324” has been used to designate both Expansion bus interface and Audio Adapter.

(c) In Figure 14, reference character “1440” has been used to designate both Incenter and Laplacian Smoothing and Interior Angle Screening.

Specification

3. The disclosure is objected to because of the following informalities. Appropriate correction is required.

3-1. w, as shown in equation (2), has not been defined.

3-2. It appears that the “n-the”, as described at line 23 of page 12, should be “n-th”.

3-3. x, h, a, b, and g, as described at lines 17-18 of page 15, have not been used in any equation.

3-4. As described at line 10 of page 17, “element element j at node i”. (Emphasis added.)

3-5. As described at line 14 of page 17, “users would prefer the to move nodes”. (Emphasis added.)

3-6. [12], as described at line 13 of page 20, has not been identified.

4. The Examiner requests copies of all publications referred to in the specification at pages 26-28 because they appear to be reasonably necessary to the examination of this application and cannot be found.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 5, 10, and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

6-1. Claims 5, 10, and 15 recite the limitation “constraining the node within a predetermined tolerance” in each claim. However, for $r \geq 1$, as calculated by equation (6b), the new location of node i may not be resided within the sphere of radius $R = dTol$. Therefore, without undue experimentation, it is unclear for one skilled in the art how to constrain the node within a predetermined tolerance as calculated by equation (6b) when $r \geq 1$.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 6-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8-1. Claim 6 recites the limitation “the graphic model” in line 5 of the claim. There is insufficient antecedent basis for this limitation in the claim.

8-2. Claim 11 recites the limitation “the graphic model” in line 6 of the claim. There is insufficient antecedent basis for this limitation in the claim.

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8-3. Claims not specifically rejected above are rejected as being dependent on a rejected claim.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 1-15 are rejected under 35 U.S.C. 101 because the inventions as disclosed in claims are directed to non-statutory subject matter.

10-1. Claims 1-15 are directed to smoothing a node. This claimed subject matter lacks a practical application of a judicial exception (law of nature, abstract idea, naturally occurring article/phenomenon) since it fails to produce a useful, concrete and tangible result.

Specifically, the claimed subject matter does not produce a useful result because the claimed subject matter fails to sufficiently reflect at least one practical utility set forth in the descriptive portion of the specification. More specifically, while the described practical utility is directed to smoothing a node, the claimed subject matter relates ONLY to a model having at least one node. When the model has only one node the recited "smoothing operation" fails to produce a useful result.

10-2. The Examiner acknowledges that even though the claims are presently considered non-statutory they are additionally rejected below over the prior art. The Examiner assumes the Applicant will amend the claims to overcome the 101 rejections and thus make the claims statutory.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Blacker, U.S. Patent 5,315,537 issued May 24, 1994 (IDS 1, filed June 24, 2004).

12-1. Regarding claim 1, Blacker discloses a method for smoothing, comprising:

loading (inputting a boundary, column 6, lines 32-34), in a data processing system, a model having at least one node (the initial loop, column 6, lines 34-44);

receiving a selection of a node of the model (nodes on the current paving boundary that are not part of the permanent boundary, column 12, lines 30-34);

determining a nodal valency of the node (FIG. 12(b));

determining an element connectivity pattern of the node (quadrilateral element, FIG. 12(b));

performing a smoothing operation on the node according to the nodal valency and the element connectivity pattern (paving boundary smooth step 131, column 12, lines 30-34); and storing the model.

12-2. Regarding claim 2, Blacker further discloses wherein

[if the element connectivity pattern is a triangle, then incenter-based smoothing is performed;]

if the element connectivity pattern is a quad-only mesh, then isoparametric-Laplace smoothing is performed (a modified isoparametric smooth, column 12, lines 30-34);

[if the element connectivity pattern is a mapped region, then equipotential smoothing is performed; and

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if the element connectivity pattern is a free-mixed mesh, then combined incenter and laplacian smoothing is performed].

12-3. Regarding claim 3, Blacker further discloses wherein the smoothing of the node is performed using

$$P_i' = \sum_{n=1}^N F_n(C,V) \cdot \Omega_n(C,V)$$

and wherein i is the node to be smoothed, i is connected to N elements, P_i' is the new position of node i, F_n is the variational weight factor for n-th element Ω_n is the positional function for n-th element, C denotes the connectivity pattern of the node, and V indicates the valency of the node (column 12, equation [19]).

12-4. Regarding claim 4, Blacker further discloses comprising performing an interior angle screening process (If the expansion ratio and interior angle are both greater than threshold values, column 16, lines 10-14).

12-5. Regarding claim 5, Blacker further discloses comprising constraining the node within a predetermined tolerance (to reflect a desired length, column 12, lines 59-68).

12-6. Regarding claims 6-10, these system claims include equivalent method limitations as in claims 1-5 and are anticipated using the same analysis of claims 1-5.

12-7. Regarding claims 11-15, these computer program product claims include equivalent method limitations as in claims 1-5 and are anticipated using the same analysis of claims 1-5.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

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Reference to Budge, U.S. Patent 6,678,642 B1 issued January 13, 2004, and filed October 8, 1998, is cited as disclosing smoothing the ALE mesh.

14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Herng-der Day whose telephone number is (571) 272-3777. The Examiner can normally be reached on 9:00 - 17:30.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: (571) 272-2100.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kamini S. Shah can be reached on (571) 272-2279. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Herng-der Day
December 26, 2006

H.D.


KAMINI SHAH
SUPERVISORY PATENT EXAMINER